

AMENDMENTS TO THE CLAIMS

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method of producing particles comprising:
providing a supercritical fluid or compressed gas having a surfactant dissolved therein;
providing a solution comprising one or more solutes dissolved in one or more solvents;
contacting the solution and the supercritical fluid or compressed gas having the surfactant dissolved therein together in a dispersion assembly to form an emulsion, ~~the a stabilized solution-in-supercritical fluid or compressed gas~~ emulsion having a continuous phase comprising the supercritical fluid or compressed gas and a discontinuous phase comprising the solution;
spraying the stabilized solution-in-supercritical fluid or compressed gas emulsion through an orifice across a pressure drop ~~to in the form of~~ spray droplets into an expansion vessel that is maintained at a pressure and a temperature sufficient to cause at least a portion of the supercritical fluid or compressed gas to decompress into a gas phase and to cause the discontinuous phase of the solution-in-supercritical fluid or compressed gas emulsion in the spray droplets to freeze and thus form frozen particles; and
removing the supercritical fluid or compressed gas and the solvent from the spray droplets freeze-drying the frozen particles to obtain particles comprising the one or more solutes that are substantially devoid of the one or more solvents and the supercritical fluid or compressed gas.

Claims 2-7 (canceled)

Claim 8 (currently amended): The method according to claim 1 wherein a surfactant co-surfactant is dissolved in the solution prior to contacting the supercritical fluid or compressed gas.

Claim 9 (original): The method according to claim 1 wherein the solution and the supercritical fluid or compressed gas are contacted together under high shear mixing conditions to form the emulsion.

Claim 10 (original): The method according to claim 1 wherein the particles formed after removal of the solvent have an average particle size of from about 0.1 nanometers to 10 micrometers.

Claim 11 (original): The method according to claim 1 wherein the one or more solutes is selected from the group consisting of medicinal agents, biologically active materials, sugars, viral materials, diagnostic aids, nutritional materials, proteins, peptides, animal extracts, plant extracts and combinations thereof.

Claim 12 (original): The method according to claim 1 wherein the one or more solutes is selected from the group consisting of agricultural chemicals, dyes, explosives, paints, polymer precursors, alkyloids, alkaloids, cosmetics, insecticides, pigments, toxins, antigens, enzymes, catalysts, nucleic acids, and combinations thereof.

Claim 13 (original): The method according to claim 11 wherein the solution further comprises an additional solute that acts as a coating agent selected from the group consisting of polymers, fillers, disintegrants, binders, solubilizers, excipients and combinations thereof.

Claim 14 (original): The method according to claim 13 wherein the polymer is selected from the group consisting of polysaccharides, polyesters, polyethers, polyanhydrides, polyglycolides (PLGA), polylactic acids (PLA), polycaprolactones (PCL), polyethylene glycols (PEG), polypeptides and combinations thereof.

Claim 15 (currently amended): A method of producing particles comprising:

providing supercritical or compressed carbon dioxide having a surfactant dissolved therein;

providing a solution comprising a biologically active material, a co-surfactant and a matrix material dissolved in water;

contacting the solution and the supercritical or compressed carbon dioxide having the surfactant dissolved therein together under high shear in the presence of a surfactant a dispersion assembly to form an emulsion, the a stabilized solution-in-supercritical carbon dioxide or compressed carbon dioxide gas emulsion having a continuous phase comprising the supercritical or compressed carbon dioxide and a discontinuous phase comprising the solution;

spraying the stabilized solution-in-supercritical carbon dioxide or compressed carbon dioxide gas emulsion through an orifice ~~to~~ across a pressure drop in the form of spray droplets into an expansion vessel that is maintained at a pressure and a temperature sufficient to cause at least a portion of the supercritical carbon dioxide or compressed carbon dioxide gas to decompress into a gas phase and to cause the discontinuous phase of the solution-in-supercritical carbon dioxide or compressed carbon dioxide gas emulsion in the spray droplets to freeze and thus form frozen particles;

and

removing the supercritical or compressed carbon dioxide and the solvent from the spray droplets ~~to form~~ freeze-drying the frozen particles to obtain discrete particles that comprise comprising both the biologically active material and the matrix material that are substantially devoid of carbon dioxide and water.

Claims 16-20 (canceled)